

Because injection can lead to transient demineralization of the cyst wall, it is prudent to protect the involved bone from trauma for at least two months after injection. X-ray films are taken at two-month intervals. The maximum increase in density after a single injection typically occurs at four to five months, at which time a decision is made regarding the need for further injections. In 10% to 25% of cases, healing occurs with a single injection. The rest generally will heal with further injections (seldom more than four) either completely or sufficiently that the risk of further fracture is minimal.

In view of the high success rate, low morbidity, and relatively low cost, corticosteroid administration is generally the initial appropriate therapy for unicameral bone cysts in immature patients. Bone grafting should generally be reserved for cysts that fail to respond to multiple injections or cysts that present after physeal closure.

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Internal Fixation of Degenerative Disease of the Lumbar Spine

THE SURGICAL TREATMENT OF DEGENERATIVE DISEASE of the spine frequently involves both laminectomies and fusions. Attempts at fusion can result in nonunion. The incidence of nonunion increases when the number of levels involved in the fusion increases. Fusions of the lumbar spine are also done to correct deformities. These challenges have motivated the design of various devices for internal fixation.

Most designs of devices for internal fixation have incorporated instruments used in treating scoliosis. The two most common types have been the Harrington rod, a hook and distraction system, and the Luque system, which uses a metal rod with wires that are placed beneath the various laminae, pulled around the rod and then tightened. Although these systems have worked well in patients with thoracic scoliosis, neither of them has given solid fixation in the lumbar spine because it is more mobile and has greater ranges of motion than the thoracic spine.

There have been other systems adapted to the lumbar spine, such as Knodt rods, Weiss springs, and Luque rings, but none of these have produced secure fixation. The use of these systems may also result in a loss of lumbar lordosis, causing the patient to stand in a constantly flexed position. In 1976 a system of placing screws in the pedicle and attaching them to plates was developed in France. This provided rigid fixation in the lumbar spine.

Since then, numerous variations of the plate-and-screw or rod-and-screw system have been developed, permitting surgeons to secure fixation with control of spinal alignment. A number of complications may develop with these systems, however. There may be a pronounced increase in the infection rate, two to three times that of other surgical procedures, both because of the implant itself and because of the length of the operation. Broken screws and a loss of fixation can also occur. With some patients who have osteoporosis, it is difficult to gain good purchase with the screw, so the procedure must be done with caution. In addition, there may be an increased incidence of degeneration of the first mobile seg-

ment above the fusion because of stresses transferred by the rigidity of the fixation devices.

Because of the complications, these implants must be used selectively and with great caution by someone who is familiar with both spine surgery and the systems of internal fixation of the spine. Great care must be taken by those who embark on this to train adequately, both in the laboratory and in the operating room, before they do this procedure by themselves.

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The Management of Giant Cell Tumors of Bone

GIANT CELL TUMOR OF BONE is a benign neoplasm found typically in the end of long bones in patients in their third and fourth decades. The surgical treatment most commonly used over the past 20 years has been a conservative curettage of the lesion and packing of the defect with some form of bone graft material. Two years following this primary attack on the tumor, the recurrence rate has been about 30%. Because of this high failure rate, many surgeons in larger centers have taken a more aggressive approach to the problem by suggesting a wide resection of tumor including the adjacent joint surface. The large resulting defect is then replaced with an osteochondral allograft, total joint prosthesis, or an arthrodesis. Indeed, with this aggressive approach, the recurrence rate dropped to around 5% but at a high price of functional disability for the lifetime of a young patient with an excellent prognosis for a long life.

For the past decade a new approach has been taken to reduce the significant disability resulting from these more aggressive wide resections and at the same time keep in line with a 5% recurrence rate. This approach has been an aggressive curettage of the lesion followed by packing of the surgical defect with bone cement commonly used in total joint arthroplasty. The procedure is relatively simple compared with large bone grafting or prosthetic operative procedures, and the complication rate is low. Patients are allowed the early use of the involved joint because of the immediate stability provided by the cement replacement of even large surgical defects frequently created just beneath the joint surface. It must be emphasized that the curettage must be aggressive and supplemented by the use of high-speed dental burs and water-pick lavage of not only the bone defect but the surrounding soft tissues as well. In the few cases where recurrence has resulted, the problem can usually be handled by a simple local debridement of the recurrent area without removing the entire cement block and with minimal injury to the adjacent joint. Although long-term results are not yet available, at this time this procedure holds considerable promise for better results than previously achieved.

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